A. Cover Sheet

1. **Specify:** [X] Agricultural Application [X] Individual Application
   [ ] Urban Project [ ] Joint Application
2. **Proposal Title:** Construct on-farm irrigation system improvements to increase irrigation efficiency to facilitate irrigation water conservation. The project involves the installation of drip/micro irrigation systems on approximately 474 acres of existing flood irrigated almonds and 115 acres presently used for flood irrigated alfalfa production that will be planted to almonds during spring 2001.
3. **Principal Applicant:** Columbia Canal Company (Columbia CC)
4. **Contact – name & title:** Randy Houk – General Manager
5. **Mailing address:** 6770 Avenue 7 ½ Firebaugh, CA 93622
6. **Telephone:** 559-659-2426
7. **Facsimile:** 559-659-2424
8. **Electronic mail:** columbia@thegrid.net
9. **Funds requested – dollar amount:** $233,852.60
10. **Applicant cost share funds pledged – dollar amount:** $233,852.62
11. **Duration – (month/year to month/year):** June 2001 to September 2001
12. **State Assembly and Senate districts and Congressional district where the project is to be conducted:** 16th State Senate District – Jim Costa
    30th State Assembly District – Dean Flores
    20th US Congressional District – Calvin Dooley
13. **Location and geographic boundaries of the project:** The Columbia CC is located in the valley trough area of the central San Joaquin Valley north of the City of Mendota and east of the City of Firebaugh. Most of the lands in the Columbia CC are located adjacent to and east of the San Joaquin River in Madera County with a small area of Columbia CC lands south of the San Joaquin River in Fresno County.
14. **Name and signature of official representing applicant. By signing below, the applicant declares the following:**
    - the truthfulness of all representations in the proposal;
    - the individual signing the form is authorized to submit the application on behalf of the applicant; and
    - the applicant will comply with the contract terms and conditions identified in Section 11 of the Proposal Solicitation Package.

_____ _____
(printed name of applicant) (date)

_____
(signature of applicant)

B. Scope of Work

B – 1. Abstract

The purpose of the proposed project is to construct on-farm irrigation system improvements to increase irrigation efficiency to facilitate irrigation water conservation. The project involves the installation of drip/micro irrigation systems on approximately 474 acres of existing flood irrigated almonds and 115 acres presently used for flood irrigated alfalfa production that will be planted to almonds during spring 2001. The project applicant is the Columbia CC. The irrigation system improvements would be constructed on lands owned by five farmer cooperators, all long-time shareholders in the Columbia CC. The Columbia CC has a long history of supporting and implementing water conservation measures. These ongoing water conservation efforts are important given constraints associated with surface water deliveries and the underlying over drafted groundwater aquifer. The Columbia CC has been encouraging the conversion of gravity irrigation systems to more efficient pressurized systems. The objective of the proposed project is to: 1) provide financial assistance to the five farmer cooperators to establish the proposed irrigation systems; 2) demonstrate the efficiency of the proposed system improvements to other farmers in the area to further encourage the adoption of these irrigation systems; and 3) to conserve irrigation water supplies.

B – 2. Critical Issues

The Columbia CC is an incorporated mutual water company with the Articles of Incorporation approved on April 3, 1926. The Columbia CC delivers irrigation water under rules and regulations adopted April 25, 1966 and amended May 23, 1995.

The Columbia CC is located in the valley trough area of the central San Joaquin Valley north of the City of Mendota and east of the City of Firebaugh. Most of the lands in the Columbia CC are located adjacent to and east of the San Joaquin River in Madera County with a small area of Columbia CC lands south of the San Joaquin River in Fresno County (refer to the attached Vicinity Map). The proposed irrigation system improvements would be constructed by five landowners who farm within the Columbia CC boundary.

The Columbia CC encompasses a gross service area of 16,500 acres. Water service is provided to about 15,392 gross irrigable acres with the remaining 1,108 acres used for various Columbia CC facilities. Cotton, alfalfa, and various vegetables are the predominate crops grown in the Columbia CC, with these crops typically comprising about eighty percent or more of the annual cropping pattern. Recently, some lands have been converted to permanent crop plantings, primarily almonds. More growers are becoming interested in converting row crop lands to almonds, a crop that requires less water and has potentially higher economic returns.

The primary source of irrigation water is from surface deliveries. Additional irrigation water is provided from Columbia CC and grower owned wells. Irrigation tailwater is collected and reused for irrigation through a system of Columbia CC and grower surface drains and on-farm tailwater collection/reuse facilities. Any excess surface drainage from irrigation not reused for irrigation is generally discharged into the San Joaquin River. These discharges to the San Joaquin River are infrequent.

Columbia CC holds on behalf of its landowners significant riparian rights to San Joaquin River waters that were historically diverted for irrigation. To make the construction of Friant Dam and the subsequent storage and diversion of San Joaquin River water to other users both inside and outside the basin feasible, the United States Bureau of Reclamation (USBR) agreed to provide "substitute water" from the Delta which would be delivered via the Delta-Mendota Canal and Mendota Pool to satisfy the riparian rights held by Columbia CC. The Columbia CC now receives surface water deliveries under the terms and conditions of a "Contract For Exchange Of Waters" (Exchange Contract) negotiated with the USBR. The Exchange Contract provides for the annual delivery of 59,000 acre-feet under noncritical year hydrologic conditions. Under critical year hydrologic conditions the delivery would be reduced to 45,000 acre-feet. The Columbia CC has the right to divert its riparian rights from water released from Friant Dam into the San Joaquin River when water from the Delta is not available in sufficient quantities to meet contractual quantity requirements. By contractual agreement, the Columbia CC together with the other Exchange Contractors, have a first priority to flows from the Delta exported by the USBR. The Exchange Contract does not provide a full water supply for irrigation of agricultural crops within Columbia CC. Even under noncritical hydrologic conditions, groundwater pumping is needed to supplement surface water deliveries.

Annual groundwater pumping by Columbia CC varies based on a number of factors, but generally averages about 10,000 acre-feet. The groundwater basin beneath the Columbia CC lands is in a state of overdraft and groundwater surface elevations have been declining for a number of years. This is occurring largely from a significant cone of depression east of Columbia CC where surface water supplies are not available and annual pumping greatly exceeds recharge capabilities. As a result, subsurface inflows and percolation that would normally recharge the Columbia CC aquifer, flows toward this cone of depression away from the Columbia CC. Columbia CC is interested in reducing the annual reliance on groundwater pumping.

A major priority of the Columbia CC is to reduce the demand for irrigation water by: 1) converting lands used to produce high water use crops, such as alfalfa, to permanent crops like almonds, and 2) improving water conservation by promoting the use of more efficient irrigation methods, such as drip/micro, on permanent crop plantings. A major element of the Columbia Resources Conservation District (Columbia RCD) set forth in their 1999/2000 work plan was to increase agricultural water conservation by improving on-farm agricultural water use efficiency. The boundaries of the Columbia CC are entirely within the Columbia RCD.

B – 3. Project Nature, Scope and Objectives

The Columbia CC has 1,444 acres planted to permanent crops, consisting primarily of almonds. In the spring of 2001, another 115 acres will be converted from flood irrigated alfalfa/row crop land to almonds. This will increase the total almond acreage in the Columbia CC to 1,529 (1,559 acres in permanent crops). Including the 115 acres to be planted next year, 672 acres of almonds would be flood irrigated. Presently, 857 acres of almonds are drip/micro irrigated in Columbia CC. A major objective of the Columbia CC is to continue the conversion of flood irrigated almonds to drip/micro irrigation to conserve limited irrigation water supplies.

The objective of this project is to provide grant funding to provide an incentive and encourage the conversion of 589 acres of flood irrigated lands to drip irrigation. Based on records of water use and Columbia CC experience, the estimated annual water savings from improved irrigation efficiency would be about 1.5 acre-feet per acre for a mature almond orchard. This equates to annual water conservation savings of about 884 acre-feet for the proposed project. This estimate does not consider the water savings that would be realized from the conversion of 115 acres of flood irrigated alfalfa to drip/micro irrigated almonds. Those annual water conservation savings would be about 3 acre-feet per acre, which equates to about 345 acre-feet per year.

The Columbia CC has historically marketed small amounts of water to local wildlife refuges and other agricultural water users. Another objective of the proposed project is to make more water available for marketing to provide funding for future Columbia CC water conservation programs/improvements.

B – 4. Methods and Procedures

The proposed project consists of the installation of drip/micro irrigation systems on five separate almond orchards as follows:

- Burkhart Farms – 80 acres (existing planting).
- Chris Cardella Ranch – 70 acres (to be planted spring 2001).
- DTS Farms – 45 acres (to be planted spring 2001).
- Elrod Farming – 100 acres (existing planting).
- John Mancebo – 294 acres (existing planting).

The scope of the proposed project is to install drip/micro irrigation systems on these orchards in accordance with engineering designs and price quotations from Agri-Valley Irrigation, inc., CalWest Rain and G & L Irrigation. These three local irrigation companies would construct the proposed irrigation systems. The proposed facilities would include water-metering equipment to measure monthly/annual irrigation water applications.

The Columbia CC staff will prepare an annual report for submittal to the state each January summarizing the operations of each cooperators irrigation system and providing an estimate of annual water conservation savings. The Columbia CC General Manager will be available to participate in meetings and provide up to one presentation annually on the project results. Annual reports and presentations would be provided over a five-year period after grant approval by the state. The annual reports will focus on irrigation management strategies being used by each cooperator and report estimates of annual water conservation savings.

B – 5. Schedule

The installation of the proposed drip/micro irrigation systems would commence upon receiving approval of the grant application from the state. The irrigation system facilities would be operational by August or September 2001 assuming that funds are obligated during June.

B – 6. Monitoring and Assessment

The Columbia CC will collect water delivery data from gravity irrigated almonds for comparison with data collected from the drip/micro irrigated orchards. These data would be tabulated using an Excel spreadsheet. The Columbia CC with continue to support mobile laboratory evaluations and will develop historic data for comparison of gravity versus drip/micro irrigated orchards. These data will be included in annual reports prepared by the Columbia CC and Columbia RCD.

C. Outreach, Community Involvement, and Information Transfer

Information would be disseminated largely through existing programs managed by the Columbia CC and Columbia RCD. The Columbia CC General Manager will present a report to the annual meeting that summarizes the activities associated with the various water conservation projects in process within the district. A summary of the project activities and findings would be included in the Columbia CC annual report.

The Columbia RCD prepares an annual report each year by September 1 in accordance with the Department of Conservation guidelines/requirements. The annual report will be made available to the Madera County Board of Supervisors, the Department of Conservation and the NRCS local office.

D. Qualifications of the Applicants, Cooperators, and Establishment of Partnerships

The project manager will be Randy Houk, the Columbia CC General Manager (resume attached). Resolution Number 2001-02, recently adopted by the Columbia CC Board of Directors, authorizes the preparation and submittal of this application by the General Manager.

The project cooperators are the five farming entities previously identified. Each of these farming organizations is a long-term landowner and share-holder within the Columbia CC.

During the January 11, 2001 Columbia CC board meeting, the Board of Directors unanimously approved the Columbia CC Water Conservation Grant Policy. This policy provides for a 25 percent grant for water conservation projects implemented by shareholders within the Columbia CC service area, subject to board approval. The Columbia CC board has established a 2001 funding level of $300,000, with a maximum grant per shareholder of $50,000 for 2001.

E. Costs and Benefits

E-1. Budget Summary and Breakdown

The project construction costs for the irrigation system improvements are summarized as follows:

Table 1 - Summary of Project Construction Costs

Grower	Acreage	Contractor	Cost($)
Burkhart Farms	80	Agri-Valley	43,601.00
Chris Cardella Ranch	70	CalWest Rain	93,561.00
DTS Farms	45	G & L Irrigation	68,500.00
Elrod Farming	100	Agri-Valley	65,443.22
John Mancebo	294	G & L Irrigation	196,600.00
Total	**589**		**467,705.22**

The estimated total construction cost is $467,705.22 based on the engineering designs and firm price quotations provided by the various irrigation companies. The cooperators will be responsible for paying annual irrigation system operating and maintenance costs.

E-2. Budget Justification

The project budget is based on firm price quotations from irrigation companies for construction of the proposed irrigation system improvements.

E-3. Benefit Summary and Breakdown

Based on records of water use and Columbia CC experience, the estimated annual water savings from improved irrigation efficiency would be about 1.5 acre-feet per acre for a mature almond orchard. This equates to annual water conservation savings of about 884 acre-feet for the proposed project, as described in Section B-3. In the Central Valley area, the economic life of an almond orchard ranges from about 30 to 40 years. Based on that expected life, the total water conservation savings would be about 26,520 to 35,360 acre-feet over the life of the project.

The value of conserved water is equivalent to the amount of money historically charged for water marketed to other users by the Columbia CC. Typically this water is delivered to wildlife refuges and other agricultural water users. Based on recent water sales, the value of this water to the Columbia CC is about $100 per acre-foot, and the buyer is responsible for paying additional charges for delivery and any other related costs.

Another consideration in estimating the value of conserved water is the Columbia CC avoided pumping cost. The estimated amount of water conserved annually is nearly 10 percent of total Columbia CC pumping, on the average. Groundwater pumping costs average about $40 per acre-foot. The total value of water conserved would be estimated at about $140 per acre-foot or approximately $123,760 per year. This equates to a total benefit ranging from about $3,712,800 to $4,950,400 over the expected life of the project.

The proposed project would result in an annual average Columbia CC groundwater pumping reduction of about 10 percent. This reduction in the groundwater overdraft is another benefit from the proposed project that can not be quantified for purposes of assessing costs and benefits.

E-4. Assessment of Costs and Benefits

The assumptions used for the assessment of costs and benefits are summarized as follows:

- Annual water conservation savings estimated at 1.5 acre-feet per acre over 559 acres or about 884 acre-feet.
- Estimated value of conserved water is the sum of market value ($100/acre-foot) and avoided pumping costs ($40/acre-foot), which total about $140/acre-foot.
- Annual project benefit of about $123,760.
- Total project cost of about $467,705.22.
- Project life is estimated to range from about 30 to 40 years.
- 6 percent discount rate.

The assessment of the costs and benefits is summarized as follows:

Table 4 - Assessment of Costs and Benefits

Project Life	Project Costs ($)	Project Benefits ($)		
		Annual Benefit	Present Worth	Net Present Value
30 Years	467,705	123,760	1,703,536	1,235,831
40 Years	467,705	123,760	1,862,130	1,394,425

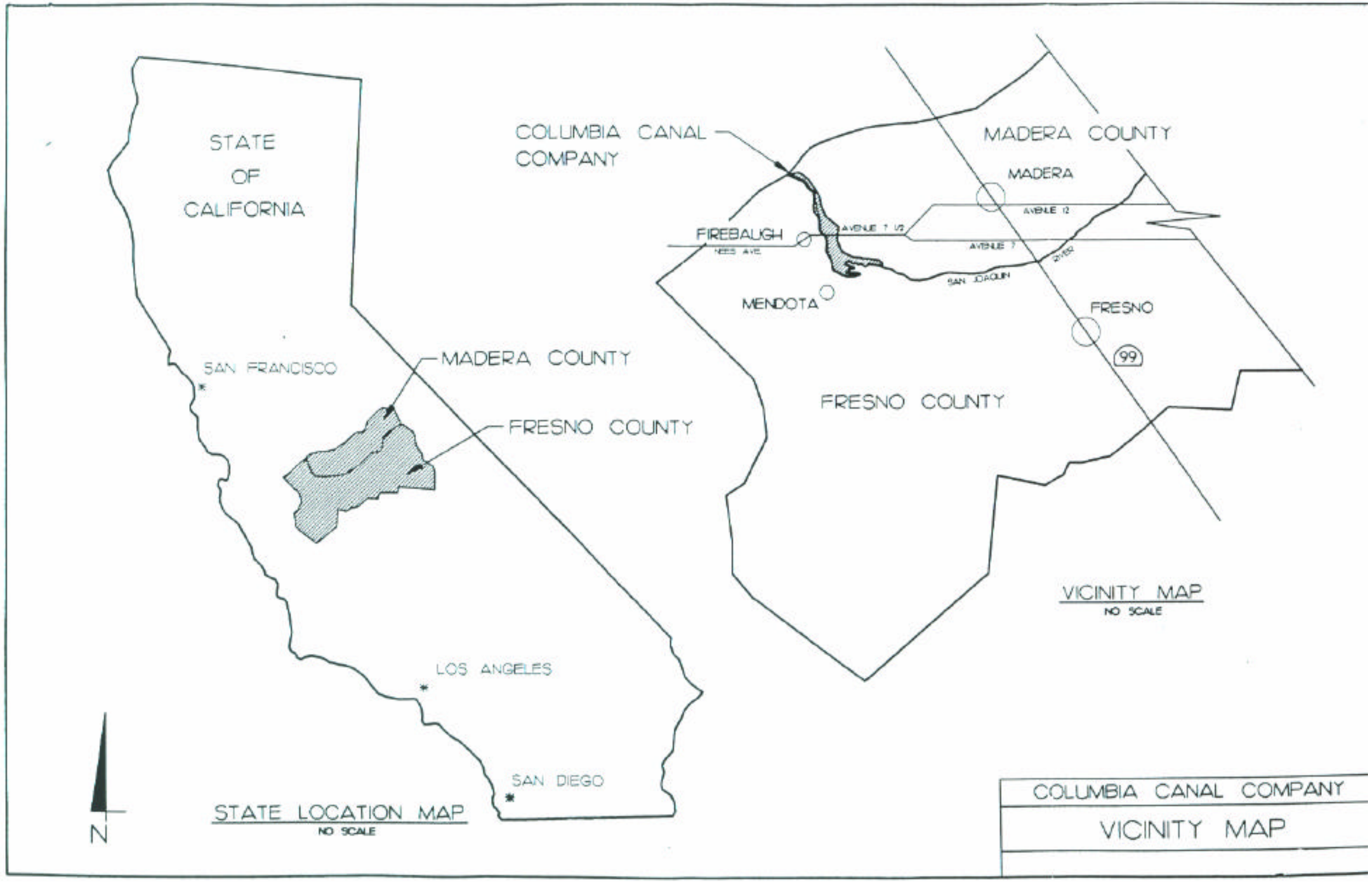
E-5. Project Cost Share

The Columbia CC proposes a 50 percent cost share with the state providing grant funding for the remaining 50 percent of the estimated costs for the proposed project. The applicants cost share would be funded by both the Columbia CC and the farmer cooperators with each paying one half of the cost share amount. The cost share from Columbia CC would be provided by grant funding paid under the Columbia CC Water Conservation Grant Policy. The farmer cooperators would obtain funding from other sources to pay their cost share amount. The proposed cost share arrangement is summarized as follows:

Table - 3 Cost Share Summary

Project Cooperator	Est. Cost ($)	Cost Share ($)		Grant Funding Amount ($)
		Columbia CC	Cooperators	
Burkhart Farms	43,601.00	10,900.25	10,900.25	21,800.50
Chris Cardella Ranch	93,561.00	23,390.25	23,390.25	46,780.50
DTS Farms	68,500.00	17,125.00	17,125.00	34,250.00
Elrod Farming	65,443.22	16,360.81	16,360.81	32,721.60
John Mancebo	196,600.00	49,150.00	49,150.00	98,300.00
Total	**467,705.22**	**116,926.31**	**116,926.31**	**233,852.60**

The Columbia CC is requesting a grant in the amount of $233,852.60. These funds along with the grant monies made available through the Columbia CC program and the farmer cooperator contributions would be expended during the summer 2001 after the project is funded.



COLUMBIA CANAL COMPANY

VICINITY MAP

RANDY HOUK

11130 Road 5 1/2
Firebaugh, CA 93622

Office: (559) 659-2426
Mobile: (559) 978-8136
Home: (559) 659-2000

In January of 2000, 1 was asked to take over as General Manager of Columbia Canal Company (CCC). I'm a shareholder and owner of CCC. Due to the ever increasing regulatory nature of the demands put upon water in California, the Board of Directors of CCC needed a Manager to keep up with the issues and improve the CCC water delivery system and implement water conservation plans throughout the district. I agreed to retire from farming and take over the position. I had a general understanding of local and state water issues based on farming in different Central Valley water districts (Columbia, CCID, Westlands, Broadview, San Luis). Since becoming Manager of the CCC this past year, CCC has begun cement-lining of canals, implemented a water conservation grant program, and installed tail-water recovery systems to improve our district, improved the water delivery system and decreased discharges into the San Joaquin River, These projects have been paid by the shareholders of CCC.

CCC is a member of the San Joaquin River Exchange Contractor Water Authority (SJRECWA) along with (SLCC, CCID, and Firebaugh CC). The experience gained as manager of CCC attending the overwhelming amount of meetings and workshops, conferences, and seminars dealing with water issues affecting our district, the Exchange Contractors and the State is ongoing and increasing daily.

SUMMARY

Westside grower with 20+ years of experience in production agriculture. Skills and abilities:

Ranch Management: Managed large acreages in California and Arizona, including supervision of up to 75 full-time and 800 seasonal employees. Assisted in marketing, packing, and shipping of various commodities.

Water Management & Irrigation: Have general knowledge of local canal systems and riparian water issues. Calculated water requirements for diverse crops. Planned and directed construction or installation of pumps and irrigation systems (drip, overhead, micro, center pivot).

Grower Relations & Board Reporting: Coordinated and supervised contracted grower production. Negotiated grower contracts. Regularly met with growers to plan season and review production. Made formal presentations to boards.

Crop Protection: Qualified as P.C.O. by the State of California. Advised on application of pesticides, herbicides, and chemical fertilizers for fresh vegetables, row crops, trees, and vines.

Financial Management: Forecast and managed operating, capital, and crop budgets. Reviewed accounts payable/receivable and payroll. Prepared detailed expense reports with analysis of labor, production, water and equipment costs.

Crop Experience: Farmed cotton, alfalfa, corn, wheat, barley, mixed melons, garlic, onions, tomatoes, broccoli, cauliflower, carrots, bell peppers, pickling cucumbers, turnips, grapes, and a variety of tree fruits and nuts.

PROFESSIONAL EXPERIENCE

DRESICK FARMS (1/91-12/99)

Assistant Ranch Manager for diversified grower, packer, and shipper with operations in Huron, California and Vicksburg, Arizona. Managed farming operations for lettuce, melons, garlic, onions, tomatoes (canned and fresh), grapes, almonds, cherries, apples, and oranges.

- Managed increased responsibilities with acquisition of additional land (acreage doubled 6,500 to 13,000 acres).
- Converted cotton acreage to lettuce and grew approximately 50% of total crop produced in the San Joaquin Valley. Cut chemical expenses with transition to in-house spray company. Consistently delivered above-average yields on high-maintenance crop.
- Directed the installation of drip micro-irrigation system in 16-quarter sections.

AGRICULTURE CONNECTIONS (1988-1990)

General Manager for diversified fanning operation associated with NAPI (Navajo Ag Products Industry) in Farmington, New Mexico. Trained and supervised 300 employees with no prior farming experience. Prepared and managed operating and capital budgets. Managed reporting to tribal board.

- From bare land, developed 6,400 acres of melons and mixed vegetables. Primary representative that reported to tribal board.
- Directed new construction of multiple-use packing facility. Brought operation to maximum capacity, shipping 500+ truckloads of melons and vegetables each season.

MIKE YUROSEK AND SON (1986-1988)

Assistant Ranch Manager for 5,000-acre diversified ag operation in Kern County and Imperial Valley. Ranch produced cotton, carrots, broccoli, onions, melons, and lettuce.

J. A. MENDRIN (1983-1986)

Ranch Manager for ranch specializing 'in fresh vegetables, trees, and vines.

EDUCATION

Agribusiness Major: California State University, Fresno
Ag Continuing Education Courses: UC Extension and other ag organizations

LICENSES

Pilot's License: Single-Engine Land